

# Analysis of 54 Patients Who Underwent Thoracoscopic Sympathectomy

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## Analysis of 54 Sympathectomy Performed Patients

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### Abstract

**Aim:** Thoracoscopic sympathectomy is performed with a high success rate and low morbidity for the treatment of primary hyperhidrosis. However the compensatory sweating remains the most commonly reported side effect. In this study, we aimed to present our experience with thoracoscopic sympathectomy in 54 patients who were operated from various levels of sympathetic trunk.

**Material and Methods:** Medical records of 61 patients who underwent thoracoscopic sympathectomy for primary hyperhidrosis were analysed retrospectively. Seven patients were excluded because of one sided operation. The variables such as age, sex, indications for surgery, level of resection, type of resection, number of ports, complications and hospitalisation time were recorded. We contacted with all patients except four via telephone.

**Results:** A total of 54 patients were treated between January 2006 and December 2008. There were 44 male and 10 female. The median age was 24,3 years (17–37). All of the 54 patients with primary symptoms of palmar and axillary hyperhidrosis reported excellent satisfaction (100%). Compensatory sweating was reported in 6 (100%) of the T3-4-5 group, 16 (53%) of the T2-3 group, and 3 (21%) of the T2 group. The mean hospitalisation time was 2,7 days (2-8). Compensatory sweating was significantly higher when we resected the sympathetic trunk longer. **Discussion:** Thoracoscopic Sympathectomy is the cornerstone of treatment of primary hyperhidrosis with low morbidity and high satisfaction rate. However serial studies are needed that will evaluate the relationship between the compensatory sweating and resection level of sympathetic trunk.

### Keywords

Sympathectomy; Hyperhidrosis; Compensatory Hyperhidrosis

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## Introduction

Thoroscopic sympathectomy (TS) is performed with a high success rate in the treatment of palmar hyperhidrosis. Currently, this procedure is commonly performed by the thoracic surgeons. The success rate of this minimally invasive approach is significantly high, however the compensatory hyperhidrosis (CH) remains the most commonly reported side effect with severe and debilitating symptoms [1,2].

There are a lot of literature findings about how to decrease the rate of CH. The incidence of CH varies in sympathetic ganglia resected patients when searched in the literature. The discussion is focused on the level and size of resection of the thoracic sympathetic chain but unfortunately no consensus achieved about this subject up till now. In this study, we aimed to present our patients, who were treated with TS for hyperhidrosis, with the literature findings.

## Material and Methods

A total of 61 patients were analysed retrospectively who were treated in our institution for hyperhidrosis between the January 2006 and December 2008. Seven patients were excluded because of one sided operation. Four patients, who were treated via axillary thoracotomy from one side and via VATS from the other side, were included to the study because the aim of the study was to investigate the long-term effect of the sympathectomy. The variables such as age, sex, indications, level and size of resection, type of resection, number of ports, complications and hospitalisation time were recorded. We contacted with all patients except four via telephone. We have interviewed about recurrence, CH and if CH has occurred, how it has affected the quality of life. At the end of the interview we asked them if they will have accepted the operation by knowing the side effects of this operation that they are bothering now. All the answers were recorded.

## Results

There were 44 male and 10 female patients in our study. The mean age was 24,3 years (17–37). Palmar hyperhidrosis was the most common indication and all the other indications were summarized at Table 1. T3 ganglionectomy was the most common level of resection. The other level and type of the resections were summarized at table 1. En-bloc resection for thoracal nerve and ganglia was performed in 36 patients

**Table 1.** The indications, level of resections and type of sympathectomy of the TS performed patients

Indications	(n)
Palmar hyperhidrosis	28
Palmo-plantar hyperhidrosis	11
Palmo-axillar hyperhidrosis	7
Axillar hyperhidrosis	8
Level and size of resection	
T2 and T3 ganglionectomy	30
T2 ganglionectomy	14
T3, T4 and T5 ganglionectomy	6
T3 ganglionectomy	2
T3 and T4 ganglionectomy	2
Type of sympathectomy	
En-bloc resection	36
Couter ablation	18

and couter ablation was performed in 16 patients. Surgery via VATS through one port was performed in 10 patients, two ports in 31 patients, three ports in 9 patients and axillary thoracotomy from one side and VATS from the other side in four patients. Early postoperative complications were prolonged air leak in one patient, mild pyrosis in two patients, hemorrhage in one patient and recurrence in two patients. hemorrhage and recurrence were treated at the same hospitalisation period. The mean hospitalisation time was 2,7 days [2-8]. We performed two-staged operation in 3 patients. The reason for the two-staged operation was decrease of the heart rate below 45 beats per minute. Fifty of the 54 patients who were contacted with telephone reported that hyperhidrosis had ceased. We found that the success rate of the TS for hyperhidrosis is 100%. Compensatory hyperhidrosis was determined about 46,3% (n=25) of all patients. The localizations of CH includes chest, back and face. Primary symptoms of palmar and axillary hyperhidrosis reported excellent satisfaction. Compensatory sweating was reported in 6 (100%) of the T3-4-5 group, 16 (53%) of the T2-3 group, and 3 (21%) of the T2 group. CH was determined as decrease of quality of life in all of the T3-4-5 group, in 7 of the T2-3 group. We also determined that CH was significantly higher when we resected the sympathetic trunk longer.

## Discussion

Thoracoscopic sympathectomy, which is received as the most effective therapy of the idiopathic or primary hyperhidrosis, has got through different stages for the place and number of ports and resection and level of sympathetic trunk up till now. The position of the patient, multiple incision, resection of the T2, T3 and T4 ganglions and insertion of the chest tube were the discussion points of the treatment of primary hyperhidrosis before 20 years. At that time, the effectiveness and complication rate of treatment were compared according to the supraclavicular, posterior, anterior and axillar approach [3]. Currently, the treatment of primary hyperhidrosis is achieved with one port microthoracoscopic sympathectomy and the patient was discharged at the same day [4]. The most common and serious untoward side effect is CH. Many efforts to reduce CH and determine its contributing factors have been undertaken during surgical procedures.

Compensatory Hyperhidrosis is an important side effect which has a wide range of occurrence when searched in the literature. In a study of Lincht and Pilegaard also another study from Reisfeld et al, CH was found % 89 and % 83 respectively [5,6]. Sugimura et al. reported the outcomes of 727 patients who were performed T2 ganglionectomy in 399 patients, T2+3 ganglionectomy in 55 patients, and T3+4 ganglionectomy in 273 patients. Severe compensatory hyperhidrosis was reported in 15% of the T2 group, 24% of the T2+3 group, and 8% of the T3+4 group [7]. Liu et al. reported the results of 141 consecutive patients with primary hyperhidrosis who were divided into two therapeutic groups, consisted of T3 sympathicotomy group and T4 sympathicotomy group. T3 and T4 sympathicotomies are both effective for the treatment of primary hyperhidrosis and T4 sympathicotomy which decreases the side effects, do not compromise the therapeutic effect. They recommended that T4 sympathicotomy should be the method of choice [8]. In our series, we performed two redo operations for the not cessation of the sweating at early postoperative period. Palmar sweating improved in all patients who were contacted with telephone and the success rate was 100% (n=50 patients). We thought that the result of different level sympathectomy on symptoms is nearly equal but the CH is the most common and annoying side effect which should be focused in the treatment of hyperhidrosis.

Cardiac arrest is a rarely seen and frightening complication and there are three case reports in the literature. One had occurred intraoperatively, the other one had occurred two years later from bilateral sympathectomy and the last one had occurred after 24 hours of a left thoracic sympathectomy and was declared that permanent atrial pacing had been applied two of them[9]. It is stressed that one must be careful while performing bilateral thoracic sympathectomy to whom has a history of vagal syncope. And also after bilateral procedures, a decrease in heart rate of approximately %12 was noted [10].

In our cases; only 3 cases had a sympathectomy being the right side first and then the other side at a different time. The reason for this delayed surgery is the decrease in heart rate below 50 bpm after a one side sympathectomy (right side). Görür and co-workers had performed bilateral sympathectomy in 42 of 368 patients. The others were underwent one sided thoracic sympathectomy and then the other side by evaluating the results of the first sides [11]. But we think that it is meaningless to put another psychological stress on patients having a surgery for aesthetic reasons. Horner's syndrome is a clinical entity consists of myosis, ptosis and anhidrosis which is seen when the T1 ganglion - constitutes the stellat ganglion- is damaged. It is an extremely annoying complication seen %5 percent after sympathectomy surgery. In our cases we had seen 2 Horner's syndrome which was regressed afterwards. In this two cases while performing en bloc resection without using electrocautery, hemorrhage from intercostal veins had occurred. We think using electrocautery too much to control bleeding is the main cause for T1 involvement .

#### Conclusion

Thoracoscopic sympathectomy is an effective treatment and has high success rates in the treatment of hyperhidrosis. There is a need for clinical trials discussing long term results for compensation hiperhidrosis and the level of resections.

#### Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

#### Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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#### Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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